



NATURAL RESOURCES DEFENSE COUNCIL

By Electronic Mail

July 1, 2009

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Re: **Comments on the CPUC Staff White Paper
“Light-Duty Vehicle Electrification in California:
Potential Barriers and Opportunities”**

On behalf of the Natural Resources Defense Council (“NRDC”) and our 1.2 million members and activists, I appreciate the opportunity to comment on the CPUC’s Staff White Paper, *Light-Duty Vehicle Electrification in California: Potential Barriers and Opportunities*.¹ The document will serve as an important tool to stakeholders and policymakers working on reducing barriers to electrification in the transportation sector. The author(s) have done an admirable job of identifying the potential role for CPUC policy to prepare for expected electrification and to incent commercialization of plug-in electric in a manner consistent with overall CPUC policy goals.

NRDC has worked for nearly three decades to reduce emissions and energy use from the transportation sector. We support a comprehensive framework to address emissions due to vehicles, fuels, and vehicle travel – with the goal of ensuring that the transportation sector achieves the necessary greenhouse gas (GHG) reductions to allow

¹ Comments submitted June 1st, 2009 to Matthew Crosby, Regulatory Analyst, Policy and Planning Division (mc4@cpuc.ca.gov). http://www.cpub.ca.gov/PUC/energy/ev_comments.htm

the state to meet its long-term goal of 80% reductions below 1990 levels by 2050.² Three critical elements of this framework include (1) performance standards and measures for clean vehicles, low carbon fuels, and transportation system efficiency, (2) a cap-and-trade program that caps the overall GHG emissions from fuels and therefore the sector, and (3) policies and incentives to overcome barriers to investment in alternative vehicles and transit, fuels, and better land-use management. The CPUC has a role in all these areas with respect to electric transportation (ET).

The white paper (herein CPUC) has properly identified light-duty vehicle (LDV) electrification as meriting the attention of the CPUC. The need for ET is clear – nearly all long-term scenario analysis for the transportation sector has identified vehicle electrification as being a critical component to reaching 2050 GHG emission reduction goals.^{3,4} NRDC’s analysis also has shown that concerns over both climate change and petroleum dependency will continue to be major policy drivers for ET.⁵ Utility customers will benefit from the CPUC helping ensure that electrification of the transportation sector proceeds in a way that maximizes potential system, consumer, and social benefits and that minimizes, for example, peak load, additional expansion in generation capacity, and stresses to the distribution and transmission system. Given that ET is expected to result in increased and variable electricity load in the future, the CPUC can help develop a regulatory framework that ensures demand is met in an efficient, reliable manner and that the opportunities to obtain environmental and energy-efficiency benefits from PEVs are maximized.

NRDC also supports the CPUC engaging stakeholders to explore potential CPUC policy action which could reduce barriers for ET. We support CPUC staff’s recommendation of initiating a CPUC regulatory proceeding that would organize the

² Executive Order S-3-05.

³ Plug-in electric vehicles (PEVs) are widely recognized as being more energy-efficient compared to today’s gasoline and diesel-fueled vehicles.

⁴ For example, separate analysis by California’s own Energy Commission and by the University of California has consistently shown the large role electrification will need to have in the transportation sector. See for instance, see CEC’s “State Alternative Fuels Plan,” AB 1007; Steven Schiller, “Implications of Defining and Achieving California’s 80% GHG Reduction Goal,” University of California, Office of the President, presented at the 4th Annual California Climate Change Conference, September 10-13, 2007

⁵ See for instance, EPRI-NRDC (2007), “Environmental assessment of plug-in hybrid electric Vehicles.” NRDC (February 2009), “Fueling the Clean Energy Economy: Solving Global Warming Pollution in the Transportation Sector.” Cap 2.0 Policy Brief.

relevant CPUC activities related to ET into one forum. In addition, the proceeding should establish a process to identify high-priority activities that the CPUC would undertake in the near-term related to ET. We ask that as part of the recommended proceeding the CPUC evaluate the following:

1. *Different potential long-term scenarios for expected transportation electrification*, consistent with overall State policies and emission goals for the mid-term (2020) and long term (2050). The evaluation should form a basis for the development of measures that seek to maximize the potential environmental, economic, and grid benefits from PEVs and minimize potential negative impacts, such as increased demand during on-peak hours.
2. *Potential utility customer, system, and social benefits from increased ET*. The CPUC should evaluate how expected electricity demand from PEVs could be best met to support its (1) statutory obligation to provide reliable, efficient, and safe utility service and its (2) policy goals to promote energy efficiency, reduce health and environmental impacts from air pollution, including those from greenhouse gases.
3. *The development or inclusion of PEVs into existing programs* that (1) encourage energy efficiency, (2) incentivize fuel switching to increase efficiency and environmental benefits, and (3) seek to increase distributed renewable energy generation.
4. *Key market barriers to ET identified by CPUC's white paper as well as by stakeholders*. In particular, the CPUC should work with other agencies, utilities, automakers, infrastructure companies, customers, and NGOs to identify lowering of unreasonable or unnecessary barriers.

NRDC looks forward to working with the CPUC on these and other efforts related to plug-in electric vehicles. Below, we provide overarching comments on several of the specific areas raised in Chapter 6: "Additional State Agency Options for Reducing PEV Barriers." CPUC staff has raised a number of topics in the white paper for possible consideration in a proceeding. We highlight several topics below for consideration.

Tariff and Rate Designs for PEV Customers

The CPUC white paper raises the question of whether current, increasing-block pricing (IBP) schedules would pose a barrier to use of plug-in electric vehicles (p. 61). NRDC agrees that the CPUC should consider this question in a potential proceeding. For example, a household owning one plug-in electric hybrid (PHEV) achieving forty miles

(40) of range might use 2,900 kWh per year if the battery pack is fully discharged and charged on a daily basis – a significant increase for a household that, for instance, uses 6,000 kWh per year.⁶ If those same miles were traveled using a conventional vehicle however, the customer would consume approximately 10,000 kWh of gasoline (or approximately 300 gallons of gasoline), also resulting in a significantly higher amount of GHG emissions.

The IBP plays a critical role in incentivizing households to improve their energy-efficiency and conserve with respect to electricity use. However, the current IBP schedule does not account for energy savings and environmental benefits that may be gained by fuel switching, in this case, from gasoline to electricity. Households using PEVs would be increasing their overall household energy-efficiency and conservation through switching from gasoline to electricity. We support the CPUC considering these issues and how potential barriers could be addressed..

The white paper also raises the potential for the CPUC to consider time-of-use (TOU) tariffs. TOU tariffs will be an important tool for utilities to ensure optimal load management and minimize adverse load impacts on the grid from PEVs. Currently, TOU tariffs are offered by a number of investor-owned utilities (IOU) including PG&E, SCE, and SDG&E for customers owning EVs or natural gas vehicles. As part of a proceeding, the CPUC should consider whether TOU rates can be developed to cover all PEVs. For example, CPUC's TOU policies can have a significant influence on when charging occurs. TOU policies can affect demand during peak times, and thus the level of investments necessary to meet new generation and transmission capacity. Similarly, TOU policies can affect the amount of off-peak charging and the degree to which greater asset utilization can occur.

Last, NRDC agrees that the CPUC should also consider allowing PEV customers the option to participate in demand response/load control programs which can yield system benefits by improving grid reliability. The average American spends approximately one and a half (1.5) hours per day in their car, leaving the vehicle idle 94% of the time. Consequently, PEV load may in some cases be considered a suitable candidate for load shedding during supply disruptions.

⁶ Assuming the usable energy in the battery pack is 8 kWh.

Similarly, the CPUC can evaluate the potential integration and value of PEVs with variable generation resources such as wind energy (p. 32-33). FERC, in its recent proposed policy statement, identified potential challenges to resource management from variable generation resources that may over-generate during off-peak periods.⁷ The CPUC should evaluate whether PEVs with “dispatchable” demand response capabilities can provide system benefits by helping address over-generation from new renewable resources and by allowing for improved balancing of the bulk-power system.

Vehicle Incentives and Customer Education Programs

The CPUC white paper considers a potential, limited California IOU vehicle rebate program that could extend available federal and state tax incentives for consumers (p. 64). NRDC notes that in cases where load growth is expected, there may be ratepayer benefits achieved by ensuring that the load is as small as possible through energy efficiency programs which help incent the most efficient products being purchased. As vehicles increasingly shift to some levels of plug-in capability and utilize off-board electricity, there will be increasing opportunities and potential designs that improve upon the electrical efficiency of PEVs. The CPUC can play a role in encouraging households that purchase PEVs to select the most energy-efficient designs. NRDC stresses though that any incentive program the CPUC considers should be additional to, and not replace, current and future rebate program incentives.

The CPUC and utilities should also be engaged in customer education and outreach regarding PEV and energy-efficiency. Ensuring that customers understand the logistics of PEV charging installation, safe charging operation, the existence of tariff programs, and the benefits of incentive programs are all critical to ensuring that ET proceeds in an effective manner.

⁷ P. 14, “Proposed Policy Statement and Action Plan,” Federal Energy Regulatory Commission, Smart Grid Policy, 126 FERC 61,253, Docket No. PL09-4-000. <http://www.ferc.gov/whats-new/comm-meet/2009/031909/E-22.pdf>

Financing Programs for Bundled Energy Efficiency, Renewable, and PEV Installations

NRDC agrees with the CPUC's assessment that in some cases, household infrastructure investment for PEVs -- while small in comparison to the up-front costs for batteries -- may pose additional barriers to widespread technology adoption (p. 66). These barriers can involve panel upgrades, permitting delays, and installation costs. In some ways, these barriers are similar to those faced by other capital improvements involving energy efficiency of the home (e.g. installation of energy efficient windows or insulation) and renewable energy use (e.g. installation of PV systems). CPUC and utilities can have a role in encouraging local and state agencies are coordinated and the process is not inefficient and costly.

The CPUC paper also raises the idea of using on-bill financing programs for bundled investments in home energy efficiency, renewable energy, and PEV installation. Coupling the installation of photovoltaic arrays together with PEV charging infrastructure, for instance, could have added system benefits by reducing stresses on the distribution system, in addition to reducing a customer's energy bills. We believe that the topic of bundled financing programs is a reasonable issue for CPUC to consider as part of a proceeding. Thank you for your time and consideration.

Sincerely,

A handwritten signature in cursive script that reads "Simon C. Mui".

Simon Mui, Ph.D.
Scientist, Clean Vehicles and Fuels